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(54) **III-V GROUP COMPOUND SEMICONDUCTOR CRYSTAL**

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(57) Abstract:

PURPOSE: To obtain a high quality III-V group compound semiconductor crystal layer by forming a zinc oxide crystal layer on almost rounded sapphire-made substrate so as to grow the III-V group compound semiconductor layer on the zinc oxide crystal layer.

CONSTITUTION: The III-V group compound semiconductor crystal is composed of a III-V group compound semiconductor crystal 3 grown on a zinc oxide crystal 2 previously grown on an almost rounded sapphire-made substrate 1. In such a constitution, the III-V group compound semiconductor crystal 3 is represented by the formulas as shown below, i.e., GaN, $\text{Al}_x\text{Ga}_{1-x}\text{N}$ ($0 < x < 1$), $\text{In}_x\text{Ga}_{1-x}\text{N}$ ($0 < x < 1$), $\text{In}_x\text{Ga}_y\text{Al}_{1-x-y}\text{N}$ ($0 < x < 1$), $\text{In}_x\text{Ga}_y\text{Al}_{1-x-y}\text{N}$ ($0 < x < 1$, $0 < y < 1$, $0 < x+y < 1$), $\text{In}_x\text{Ga}_{1-x}\text{N}_y\text{P}_{1-y}$ ($0 < x < 1$, $0 < y < 1$) or $\text{In}_x\text{Ga}_{1-x}\text{N}_y\text{As}_{1-y}$ ($0 < x < 1$, $0 < y < 1$), $\text{GaN}_y\text{P}_{1-y}$ ($0 < y < 1$) $\text{GaN}_y\text{As}_{1-y}$ ($0 < y < 1$). Meeting the requirements for above formulas, high quality low cost light emitting element can be realized.

